#30

PHYSICS HAPPENINGS

1. COMMITTEES 1988-89

a. Personnel Advisory Committee: S. K. Misra, (Chair), M. S. Dubas N. Eddy, J. Shin (Alternate)

b. Curriculum Committee: R. Sharma (Chair) S. P. Morris, N. W. Eddy (Ex Officio), B. Frank, Phillipe Bergeron (Student)

c. Co-op Committee: J. MacKinnon, (Chair) S. Markiza, N. W. Eddy, J. Shin, M. S. Dubas, one student to be named by SPS

d. Grad Studies Committee: S. K. Misra (Chair), N. Eddy, B. Frank

e. PhD/MSc Committee: S. K. Misra (Chair), N. W.Eddy, C. S. Kalman, B. Frank, M. Frank

f. Steering Committee: C. S. Kalman, (Chair), S. K. Misra, N. W. Eddy, J. Shin

g. Faculty Council Rep: M. S. Dubas
CUFA Rep: S. P. Morris

2. URF

As in previous years an Ad for a URF was placed in the CAUT and AUCC Bulletins and Physics in Canada. (Copy of the Ad in the latter is attached). Three responses were received, all in the area of Particle Physics a) Ralph Girard; (currently at U de M). After initial interest, asked not to be nominated b) Mark Walton (currently at SLAC-Stanford). He indicated that McGill would nominate him. As he is a former student of Prof. C. S. Lam at McGill it was clear that if he won he would go to McGill and it was pointless to nominate him. c) Hai Ben Zhong (currently at Laval in Canada as a Post Doc since Aug. 1987). As a non landed Immigrant, he is ineligible.

Additionally, Simon Capstick, one of last years nominees was approached. He initially declined, wishing to remain at Carnegie Mellon for 2 years. With 1 week to the internal closing date Audrey Williams announced a sudden decision by NSERC to make this year the last URF Competition. (It was supposed to be the 2nd to last). Simon Capstick consequently changed his mind and was nominated. He is considered by many to be one of Nathan Isgur's (U of T) best students and was only rejected last year by the NSERC URF Committee because the application was considered premature. Since there is a strong chance that he will be awarded a URF next year, courses have been scheduled for a URF in the 1989-90 course schedule.

3. Dr. Charlton

Several short communications have been received from Dave. In one case the request for his input on course assignments was "Faxed" one day and a reply received the next. He is presently looking forward to summer in Australia! On Sept. 22 he gave a talk "Use of Electron Track Structure Techniques to Calculate Single and Double-stranded DNA Breaks from Incorporated Electron Emitters."

4. Canada-USSR Bilateral Exchange

See attached Notice

5. Enrollments

Updated figures are attached. Although enrollments are down, this should not have a major affect on the Department. a) The biggest drops are in the CEGEP equivalent area. This occurs in two areas i) 206/2 due to a drop in Engineering acceptances this year (ii) 204 Evening due perhaps to a drop in P/T enrollment. b) The number of students in University Physics programme is as of 1988/09/28 virtually identical to the number of students as of 87/09/24 as shown on the attachment Please note however that last year's U(1) enrollment included 5 students in PHYS 233. (That course is now in the Spring Semester) U(2) enrollment includes PHYS 398(C) which has not been offered before.

6. Adjunct Professors

Norman Lewis was reappointed for 1988-89. Prof. M. Samuel of Oklahoma State is planning to spend a sabbatical at Concordia from June 1,'89 - Dec. 31, 1989. He has been sent a contract as Adjunct Prof. of Physics. Prof. Samuel spent his last sabbatical at the Niels Bohn Institution, Copenhagen and has spent many Summers as Visiting Scientist at the Stanford Linear Accelerator Center and the Aspen Center for Physics. His current research grant is $112,000 US/year. He has over 60 published papers and four published books. McGill tried to get him to spend his sabbatical there, but he prefers Concordia to work with C. S. Kalman and M. Frank.

7. Graduate Program Director

As Dr. Misra will be going on sabbatical, Dr. B. Frank has agreed to assume the position of Graduate Program Director effective June 1, 1989.

8. Timetable The proposed schedule for 1989-90 developed by N. W. Eddy and C. S. Kalman is attached, please bring to the Departmental Meeting.

9. Library

S. K. Misra is presently Chair of the University Library Committee. Congratulations!!

10. Ukrainian Millenium

S. Markiza has been Chair of the Committee celebrating the beginning of Christianity in the Ukraine 1000 years ago. Jerry has been very active in many community causes over the years and consequently has been able to put in a good word for Concordia to a number of Quebec government ministries. This recent post was a mammoth undertaking culminating in a ball presided over by the lieutenant-governor of Quebec.

11. Computer program

J. MacKinnon has developed an interesting program entitled "Electron and positron motion in electric and magnetic fields" which is being marketed by EME Science of Danbury Connecticut.

12. Teaching

At the last Departmental meeting Dr. C. S. Kalman presented some teaching tips based on his participation at the 8th Annual Conference of the Society for Teaching and Learning in Higher Education. Some additional tips are attached. It would be desirable to present teaching tips in each issue of the Happenings. Your contributions are essential! Please share with other members of the Department.

TEACHING TIPS -- A CONSOLIDATION FROM THE 1987 3M FELLOWS WORKSHOP

Presented at the
Eighth Annual Conference
of the Society for Teaching and Learning in Higher Education
(June 18-21, 1988)

by

Dr. Bob Schulz, Professor
Faculty of Management
University of Calgary

TEACHING TIPS -- A CONSOLIDATION FROM THE 1987 3M FELLOWS WORKSHOP

Rather than a lengthy distillation of my copious notes from the 1987 3M Fellows Workshop, this paper is a synopsis of some of the teaching tips which could be of use to STLHE participants. The idea is not to argue about whether or not these items would work for all faculty members, but to serve as a "stretching" and a smorgasbord of possibilities.

THE 1987 3M FELLOWS

There were 10 people selected, mostly (6) from Western Canada -- the "emphasis" for 1987. The faculties/disciplines were diverse -- medicine, law, management, English, Irish literature, physics, microbiology, history, economics. It appeared that most (probably 8 of the 10) were Full Professors and most were involved, in one way or another, with influencing the teaching of others.

ROLE MODELS FOR TEACHING

There was a diversity of backgrounds. Probably, like most faculty members, the 3M Fellows had developed their teaching styles based on:

1. "Likes" during their own education.
2. "Opposite" of "dislikes" during their own education.
3. Retrospection at the end of the term -- what worked well and not-so-well from both the instructor's and student evaluation perspectives.
4. Good ideas from other faculty members.

FOUNDATION FOR GOOD TEACHING/LEARNING

As expected, there was unanimous agreement -- in the author's opinion -- with his words that a necessary, but not sufficient, condition for good teaching/learning is to view students as "diamonds in the rough" and not "lumps of coal".

It was interesting that the implementation of this philosophy in the classroom varied widely from overwhelming empathy, care, and concern for people's feelings to an aggressive, challenging-every-word approach.

The grade distributions for the 3M Fellows varied widely. Some had classes with overall grades somewhat higher, some had classes about the same, and some had classes somewhat lower than their colleagues. However, it seemed clear that the expectations for student excellence, the time spent by the students, and the student learning certainly was greater than "normal".

"TEACHING TIPS"

The following items, based on "tips" from the 3M Fellows, address many of the questions that "interested" faculty members have about helping students learn "more, better, faster".

1. Faculty members are facilitators of active learning, not "book readers" or "blackboard talkers".
2. Students may need to be motivated to study with small, incremental assignments. If students are uncertain about preparation for a class in one course, they are likely to spend their time on a course with specific assignments (and project/paper milestones) for each class.
3. Most excellent instructors utilize more than "normal" class participation which involves the students. Some tips on getting students to talk more include:
    - .1 Having small "buzz" groups which then "report" to the class.
    - .2 Having students write down their ideas and then calling on the students in order.
    - .3 Asking students for a variety of approaches/answers, then "voting", then showing your answer to the students.
    - .4 Asking a student/group to "start" a class discussion, then asking what grade they earned, then asking the class to "add" up to an "A", and then adding your A+ analysis.
4. Students learn best when they can find (and correct) "mistakes". One Physics professor used a technique involving passing out blank overheads and asking the students to work (quickly) in small groups. The overheads with the solutions are passed in to him. The class then scrutinizes the "solutions" and finds the mistakes.

5. During class discussions, examples of what something "is" and "is not" are very useful to students. Also, having the students understand -- and intentionally move -- "boundaries" is a good clarification exercise for students.

6. "Even" in Science and Engineering, it is possible to ask students to "change the problem" so that students "own" the problem.

7. Complimenting students on asking good questions or giving good answers increases student motivation and reduces "risk". Also, writing down of the student input, in a structured way, helps to get the students involved.

8. The class environment should be "fun", but should be spontaneous humour -- often directed at the faculty member -- rather than pre-planned jokes.

9. Students in multi-section courses will "talk", so coordination is useful as are common section exams.

10. Contrary to myths spun by not-so-good faculty members, most students work more, not less, in classes taught by excellent teachers. The reasons involve reduced uncertainly by the student that hard work is fun and will "pay off", as well as a way in which faculty members "tap into" the student's minds by understanding the learning process.

11. Students like to see examples of past exams and high quality work of other students. Also, students respond well to handout notes, "do's" and "don'ts", and suggestions on how to manage their time well.

12. One way to cope with the "peaks" and "valleys" of students during office hours is to use "post-its" for messages on your door and to have sign-up sheets for 5-10-15 minutes increments.

13. Never grade in red, because the students will think you are "dumping" on them. Use any other color.

14. Faculty members should know the names of as many students as possible. "Tent cards" and photographs help.

15. A section on "ethics/cheating" in the course outline eliminates most of these problems beforehand.

16. Many of the 3M Fellows spend more in-depth time on key concepts, rather than covering all points equally.

17. In curriculum design, one technique is to start the students with a simple "case"/problem with an answer that may be different than a quick guess by the students. As the term progresses, students can be moved progressively back from the "finish" line, so that there is more ambiguity as the term progresses.

18. References on how each class "fits in" with previous/subsequent classes is useful in getting students to see the "big picture".

19. One way to increase eye contact with the students is to use an overhead projector. Pre-typed overheads speed up simple aspects. Blank overheads "save" creative ideas for subsequent classes.

20. Often, a "freezing" or "unfreezing" could be used at the start and/or finish of the class. For example, an apparent (or real) paradox or dilemma could be introduced at the start of the class, with the logic process developed in the class. Alternatively, at the end of the class -- when the students are so comfortable and "smug" that they had developed a reasonable answer -- the "facts" of what actually occurred could be used to remind the students that there was more to learn.

21. Above all, the 3M Fellows made considerable use of teaching with questions (what if? suppose? how about? what has your experience been? how else?), rather than answers.

CAN THESE TECHNIQUES BE TAUGHT TO OTHERS?

Can these techniques be taught? That certainly seems to be the case. About a dozen part-time sessional instructors were "coached" for about 4 hours each over the term by the author. After their second time in teaching their courses, these instructors, none of whom has more than a Master's degree, receive student evaluations averaging about 4.5/5.0, with an area/department average of 4.0/5.0 and a faculty average of 3.9/5.0.

THE BOTTOM LINE

The real question is: "How can you tell that the students are learning? How much is attributable to what you are doing to help break down the learning barriers? How much is merely natural intelligence? These are difficult questions and are always useful when we get too smug with our own teaching.

SEP 22 1988

Announcement No. 89
August 30, 1988

Canada-USSR Bilateral Exchange Program in Physics

A bilateral exchange program is being implemented between the Institute for Physical Problems (the Kapitza Institute) in Moscow and the Physics Department at the University of Toronto. The program is intended to provide Canadian physicists with the opportunity to visit the Kapitza Institute for periods of up to 2 months (a total of 6 person - months per year), and in turn to invite Soviet physicists to visit Canada.

Accommodation and living expenses are to be provided by the host, while travel expenses are paid by the visitor. The program is modeled on a bilateral exchange program between the Steklov Institute in Moscow and the Mathematics Department at Queen's University, which over a period of upwards of ten years has involved mathematicians from across Canada.

Physicists interested in participating in this program, or requiring further information, are invited to contact the corordinator of the program at the address below. It would be adventageous to indicate specific areas of research and to suggest individual Soviet physicists with whom collaboration is anticipated.

Professor Eric Fawcett, Physics Department, University of Toronto, Toronto, M5S 1A7

Telephone : (416) - 978-5217/486-9801(H)

FAX : (416) - 978-8221

BITNET : FAWCETT@UTORPHYS

Verified
BFP
Aug 30/88

MEDICAL PHYSICIST
CROSS CANCER INSTITUTE

An immediate opening exists for an experienced radiation oncology medical physicist to join the Medical Physics Department of the Cross Cancer Institute.

The Department offers its physics services to the various clinical departments of the Institute.

A machine shop, electronics shop, mould room and treatment planning capabilities are administered by the Department. Two physics technicians are available to perform various technical tasks.

Responsibilities of this position will initially be in treatment machine commissioning, calibration and acceptance, but the candidate will eventually be expected to participate with the other five physicists in the support of clinical services and research programs pertaining to Diagnostic Imaging, Nuclear Medicine, M.R.I., Lasers and Radiation Oncology, including Brachytherapy. Teaching of residents and technologists will be included in these duties.

Requirements for the position are a Ph.D. degree in physics with five to seven years of clinical radiation physics experience. A computer background would be desirable, but not necessary.

The Cross Cancer Institute is a smoke-free workplace.

Please submit resume to:

L. Buska
Cross Cancer Institute
11560 University Avenue
Edmonton, Alberta
T6G 1Z2

The Alberta Cancer Board is an equal opportunity employer, but in accordance with Canadian Immigration requirements, this advertisement is directed to Canadian citizens and permanent residents.

CONCORDIA UNIVERSITY

NSERC University Research Fellowship in Physics

The Department of Physics, CONCORDIA UNIVERSITY, is seeking a candidate for an NSERC University Research Fellowship. Preference will be given to research experience in areas related to Mossbauer spectroscopy, galvanomagnetic effects, magnetic susceptibility, Theoretical Solid State Physics or Supersymmetric Gauge Field Theory. Candidates must hold a doctoral degree and must have had relevant experience, following receipt of the degree, to the extent usually required by the University for appointment at the rank of Assistant Professor. Under NSERC regulations, candidates must be Canadian citizens or permanent residents of Canada. The fellowship is for three years and renewable for an additional two years. The fellow is eligible for NSERC research grants. Applications including C.V., list of publications and three letters of recommendation should be sent as soon as possible to:

Prof. C.S. Kalman, Chair
Department of Physics
CONCORDIA UNIVERSITY
1455 de Maisonneuve Blvd. West
Montreal, Quebec H3G 1M8.

McGILL UNIVERSITY

FACULTY POSITION IN ASTROPHYSICS

The Department of Physics invites applications for a tenure-track position at the rank of assistant professor, with a possibility of upgrading to associate professor in special cases. The position could be available as early as 1 January 1989. Preference will be given to candidates in observational astrophysics with a creative potential for generating exciting research. The Department is inclined towards candidates with some experience in experiments using space vehicles (balloons, satellites, etc.) or submillimeter wavelength measurements. Excellent candidates in other fields of departmental endeavours will also be considered. The successful candidate is expected to have a strong interest in undergraduate teaching at all levels. Applications are invited until the position is filled.

Applications, together with curriculum vitae and names of three referees, should be sent to:

Professor S.K. Mark, Chairman
Department of Physics
Ernest Rutherford Physics Building
McGill University
3600 University Street
Montreal, Quebec, Canada
H3A 2T8

In accordance with Canadian immigration regulations, priority will be given to Canadian citizens and permanent residents of Canada.

INDUSTRIAL RESEARCH FELLOWSHIPS

MPB Technologies Inc. is seeking candidates to nominate for Natural Science and Engineering Council of Canada Industrial Research Fellowships.

The Fellowships will normally be tenable in the Laboratories of MPB Technologies Inc. located at Dorval, Quebec or Ottawa, Ontario.

Projects in which successful candidates may be involved include:

- Electromagnetics and Millimeter Waves
- Lasers and Laser Applications
- Electro-optics and Acousto-optics
- Plasma, Fusion and Space Science
- Expert Systems and Computer Applications

Salaries and other benefits are the same as for permanent staff of equivalent experience.

Interested recent graduates, individuals currently completing postdoctorate fellowships, or candidates who will graduate in the near future with a background in physics, electrical engineering or computer science are invited to write or call:

Dr. M.P. Bachynski
MPB Technologies Inc.
1725 North Service Road
Trans-Canada Highway
Dorval, Quebec
CANADA, H9P 1J1

Telephone: (514) 683-1490
Fax: (514) 683-1727

PHYSICS
Class schedule

1989 - 1990

NOTATION / INDICATES
THE TERM
FIRST TERM / SECOND TERM

DAY

NOTATION
18:05 -20:10
20:25 -22:30

	TTH						WF					Eve				
LOY * SGW	08:45	10:15	11:45	13:15	14:45	Spec.	08:45	10:15	11:45	13:15	14:45	MON	TUE	WED	THUR	Spec.
CHARLTON 1R								/206.A	477.A/			210/3.AA				
DUBAS		243. B/	334.A/	/467.A						/252.A			/435.AA	334.AA/		
EAPPEN			204.01/	253.B/					/478.A							
EDDY 1U										364.A/				364.AA/		496/ /496 672/673
FRANK B. 2(R + G)															632.AA/ /633.AA	855
FRANK M. URF														612.AA/ /613.AA		
KALMAN,		456.A/ /457.A														
KIPLING		/206.01						354.A/ /355.A		/273.A					354.AA/ /355.AA	
KOVACS										232.A/ /436.A		335.AA/ /336.AA		232.BB/ /232.BB		
MacKINNON 1 D (COOP)													/206.BB	/205.BB	205.AA/ 206.AA/	
MISRA SABB. LEAVE																
MORRIS								204.B/	335.A/ /336.A	/204.C				204.AA/ /204.BB		
SHARMA		243.A/ /244.A		465.A/											243.AA/ /244.AA	477 SUMMER '89
SHIN 0.5 L			253.A/ /254.A						/205.B						253.AA/ /254.AA	
URF												344.AA/ /345.AA				
PART-TIME		204.A/	/205.01 /205.A		210/3.AA								/252.AA			384.A/ /385.A

WF310

CONCORDIA UNIVERSITY

BREAKDOWN OF STUDENTS BY FIELD OF STUDY - AS OF 1988/09/20

ARTS AND SCIENCE

DEPT: PHYSICS

DATE PRINTED 1988/09/28

FIELD OF STUDY: DEPARTMENT TOTALS

			---- CREDITS TO COMPLETION ----						87/09/24
DEGREE	PROGRAM	STATUS	0	1 - 29	30 - 59	60 - 89	90 +	TOTAL	
	CERTIFICATE	PART-TIME	0 *	2 *	0 *	0 *	0 *	2 *	3
	MAJOR	FULL-TIME	0	19	17	35	7	78	90
		PART-TIME	2	10	16	16	3	47	47
			2 *	29 *	33 *	51 *	10 *	125 *	137
	HONOURS	FULL-TIME	0	3	0	0	0	3	5
		PART-TIME	0	2	0	0	0	2	2
			0 *	5 *	0 *	0 *	0 *	5 *	7
	SPECIALIZATION	FULL-TIME	0	24	14	10	1	49	34
		PART-TIME	2	12	4	5	0	23	19
			2 *	36 *	18 *	15 *	1 *	72 *	53
	MINOR +	FULL-TIME	0	1	2	0	0	3	6
		PART-TIME	1	1	0	0	0	2	1
			1 *	2 *	2 *	0 *	0 *	5 *	7
	MAJOR +	FULL-TIME	0	2	0	1	0	3	6
		PART-TIME	0	3	0	1	0	4	2
			0 *	5 *	0 *	2 *	0 *	7 *	8
	HONOURS +	FULL-TIME	0 *	0 *	1 *	0 *	0 *	1 *	0
	SPECIALIZATION +	FULL-TIME	0	2	2	0	0	4	6
		PART-TIME	0	3	1	0	0	4	0
			0 *	5 *	3 *	0 *	0 *	8 *	6
* * * TOTALS * * *		FULL-TIME	0	51	36	46	8	141	147
		PART-TIME	5	33	21	22	3	84	74
			5 **	84 **	57 **	68 **	11 **	225 **	221

1988-89 ENROLLMENT /2, /3 ONLY
END OF LATE REGISTRATION

	Actual 88/89	Over 87/88	Over 86/87	Over 85/86	Over 84/85	Over 83/84	Over 82/83
CEGEP EQUIVALENT	436	-95	-119	-79	-147	-184	-126
CEGEP LABS	267	-104	-75	-75	-129	-49	-154
200 LEVEL U COURSES	202	-20	-102	-15	-79	-39	56
200 LEVEL U LABS	146	-17	-2	28	0	-5	44
300 LEVEL U COURSES	205	-47	10	-48	-43	-14	-5
300 LEVEL U LABS	28	-4	8	5	-14	-12	6
400 LEVEL U COURSES	70	28	1	28	37	60	58
400 LEVEL U LABS	12	-8	-5	-1	-2	4	4
TOTAL							
U COURSES	455	-61	-113	-57	-107	-15	102
U LABS	186	-29	-22	35	-13	-10	57
SERVICE (Incl Astronomy)	97	31	59	47	91	94	70
Undergrad Total							
All Courses	1010	-125	-173	-89	-163	-105	46
All Labs	453	-133	-97	-40	-142	-169	-97
Grad Courses Both Terms	16	-5	-22	-29	-42		
Grad All Credits* (Equivalent 3 credit courses)	62	-16					

Total Enrollment Both Terms End of Regular Registration

1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1908	2333	2387	2584	2835	3455	3122	3188	3353	2491

***Excludes Thesis etc. Credits: Total Registered Credits divided by 3**